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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,651	11/16/2004	Dimiter Stanchev Dimitrov	015280-458000US	3349

20350 7590 08/22/2007  
TOWNSEND AND TOWNSEND AND CREW, LLP  
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SAN FRANCISCO, CA 94111-3834

EXAMINER
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HUMPHREY, LOUISE WANG ZHIYING

ART UNIT	PAPER NUMBER
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1648

MAIL DATE	DELIVERY MODE
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08/22/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/506,651	<b>Applicant(s)</b> DIMITROV ET AL.	
	<b>Examiner</b> Louise Humphrey, Ph.D.	<b>Art Unit</b> 1648	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 May 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 6, 7, 12, 19-36, 39 and 40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 10, 50 and 55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This Office Action is in response to the amendment filed 25 May 2007. Claims 1-40 are pending. Claims 6, 7, 12, 19-36, 39, and 40 are withdrawn. Claims 1-4, 10, 50 and 55 are under final rejection.

The objection to the specification is withdrawn in response to Applicant's amendment.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The rejection of claims 1-3, 10, 50 and 55 under 35 U.S.C. §103(a) as being obvious over Wyatt *et al.* (US 2004/0109887) in view of Rovinski *et al.* (US 5,866,320) is **maintained**.

The instant claims are drawn to a HIV antigenic composition comprising a HIV envelope glycoprotein 160 having a gp120 subunit and a gp41 subunit, wherein the carboxy-terminal end of gp120 is covalently linked through a heterologous peptide linker of at least 5 amino acids, to the amino-terminal end of gp41.

Wyatt describes covalently linked gp120-gp41 glycoproteins containing two Arg to Ser mutations to disrupt the proteolytic cleavage site but does not describe or suggest the use of a heterologous linker between gp120 and gp41 (page 13, [0132]).

Rovinski teaches the use of a peptide linker containing a heterologous antigenic epitope in a recombinant non-infectious retrovirus-like particle (column 2, line 34-45).

Applicants argue that Examiner has not identified in the cited references any motivation or suggestion to combine the claim limitations. However, it has been well known in the art since 1988 that intracellular sorting results in the transfer of most uncleaved gp160 to lysosomes, where it is degraded, while gp120 is transported to the cell surface and subsequently secreted. Therefore, it would be obvious to one skilled in the art at the time of invention to use a synthetic peptide linker that does not contain the proteolytic cleavage site to tether the gp120 and gp41 for the purpose of retaining the proximity of the two peptides, thereby inducing them to interact in a normal receptor/ligand complex such that the half-life of the complex is prolonged. Therefore, the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

The rejection of claims 1-4, 10, 50 and 55 under 35 U.S.C. §103(a) as being obvious over Wyatt *et al.* (US 2004/0109887) in view of Root *et al.* (US 2003/0082525) is **maintained**.

The instant claims are drawn to a HIV antigenic composition comprising a HIV envelope glycoprotein 160 having a gp120 subunit and a gp41 subunit, wherein the

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carboxy-terminal end of gp120 is covalently linked through a heterologous peptide linker selected from the group consisting of SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, and SEQ ID NO:14, to the amino-terminal end of gp41.

Wyatt describes covalently linked gp120-gp41 glycoproteins containing two Arg to Ser mutations to disrupt the proteolytic cleavage site but does not describe or suggest the use of the specific peptide linker between gp120 and gp41 (page 13, [0132]).

Root teaches the construction of a 5-helix or 6-helix gp41 protein using a peptide linker containing the GGSGG sequence (Figure 11).

Applicants argue that Examiner has not identified in the cited references any motivation or suggestion to combine the claim limitations. However, it has been well known in the art since 1988 that intracellular sorting results in the transfer of most uncleaved gp160 to lysosomes, where it is degraded, while gp120 is transported to the cell surface and subsequently secreted. Therefore, it would be obvious to one skilled in the art at the time of invention to use a synthetic peptide linker that does not contain the proteolytic cleavage site to tether the gp120 and gp41 for the purpose of: (1) retaining the proximity of the two peptides, thereby inducing them to interact in a normal receptor/ligand complex such that the half-life of the complex is prolonged while (2) the gp120-gp41 can still be transported to the surface of the cell for secretion so that this synthetic gp160 can be expressed in cells. Therefore, the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

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### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

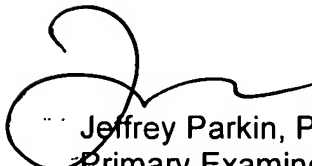
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

### ***Correspondence***

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louise Humphrey, Ph.D. whose telephone number is 571-272-5543. The examiner can normally be reached on Mon-Fri, 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell, can be reached at 571-272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

  
Jeffrey Parkin, Ph.D.  
Primary Examiner  
17 August 2007

  
Louise Humphrey, Ph.D.  
Assistant Examiner